

(2) Attachment is always effected by the oral pole; and the fundamental fact consists in a turning of the ciliary crown, which, being at first incurved, in the form of a mantle, towards the aboral pole (as in the Cyclostomata), afterwards becomes inflexed towards the oral pole.

(3) The crown constitutes a provisional and essentially larval organ; it is from this that the thick fatty mass so often described in the metamorphosis originates.

(4) The oral and suboral surfaces appear to have each a well-defined part of the highest importance in the embryogeny: the aboral surface represents the cell; the oral surface seems to be destined to play a great part in the formation of the contents of the cell; everywhere we see it penetrate into the interior, wholly or partially, to furnish the rudiments which act in a manner still to be described in the formation of the organs of the adult.—*Comptes Rendus*, September 23, 1878, p. 463.

*Migration of the Aphides of the Galls of the Pistachio to the Roots of Grasses.* By M. J. LICHTENSTEIN.

When I first announced the curious migrations of one of the *Phylloxeræ* of the oak (*P. quercus*, Boyer), from *Quercus coccifera* to *Q. pubescens*, I had the vexation of finding the correctness of my observations doubted by French entomologists; and it was necessary for an Italian naturalist, M. Targioni-Tozzetti, to repeat my experiments upon *Phylloxera florentina*, and establish the fact of the migrations of that species from *Quercus ilex* to *Q. pedunculata*, before the change of *habitat* of the former insect between the second and third larval states was decidedly accepted.

Now I have a still more curious migration to bring before the Academy. The Aphis of the galls of the Pistachio (*Anopleura lentisci*) passes from those galls to the roots of grasses, or, at least, of two species of grasses (*Bromus sterilis* and *Hordeum vulgare*).

On the 12th June last I announced to the French Entomological Society that I had found on the roots of *Bromus sterilis* an Aphis resembling in all points that of the galls of the Pistachio, the characters of which are very strongly marked; for it is the only genus among the Pemphiginæ that carries its wings flat, and the genus has only a single species. But the new comer presented the peculiarity of producing *sexual insects without rostrum*, while that of the galls furnished *larval forms with a rostrum*.

At my suggestion, M. Courchet, a pupil at the School of Pharmacy of Montpellier, has just obtained, in captivity, the breeding of the winged *Anopleura lentisci* upon the young roots of barley sown in a tube; and at the same time I found the same insect at liberty upon the roots of *Bromus sterilis*. These young subterranean wingless forms, produced by the winged aerial form, have already increased in size and are ready to reproduce in their turn.

Applying to the evolution of this insect the theory that I have established with regard to the *Phylloxera quercus*, of the correct-

ness of which I am daily obtaining fresh evidence, I may represent as follows the biological cycle of the Aphis of the Pistachio.

In May and June the egg deposited on the Pistachio by the fecundated female hatches and produces an apterous insect; this is

The *Founder* (first larval form). It produces the gall; and after four moults it produces, in its quality of *viviparous pseudogynæ*, young Aphides, destined to acquire wings and to furnish, after four moults,

The *Emigrants* (second larval form), which quit the gall, fly to the grasses, and then produce apterous young, which are

The *Budders* (third larval form). These bud underground, producing a longer or shorter series of apterous generations, until the period of swarming and of the appearance of nymphs, which furnish

The *Pupifera* (fourth larval form), which issue from the ground and fly to the Pistachio, where they deposit their pupæ, which very quickly produce the sexual individuals which copulate, and of which the female deposits the fecundated egg which serves as the starting point.

I hope soon to be able to give the complete history of other insects of the group Pemphiginæ; for M. Courchet has already been able to rear two more (*Pemphigus follicularius* and *P. semilunarius*) upon grasses, and those of the poplar and elm are too abundant long to escape our investigations with the data already acquired.—*Comptes Rendus*, November 18, 1878, p. 782.

*A new Order of Extinct Reptiles (Sauranodonta) from the Jurassic Formation of the Rocky Mountains.* By Professor O. C. MARSH.

The absence of the genus *Ichthyosaurus* in the extinct fauna of this country has long been a noteworthy feature; for up to the present time no traces of it have been detected, although its remains are especially abundant in Europe. An interesting specimen, recently discovered in the Rocky-Mountain region, presents, in most of its skeleton, the characteristics of that genus, but is *without teeth*. The vertebræ, ribs, and other portions of the skeleton preserved cannot be distinguished from the corresponding parts of *Ichthyosaurus*; and many features of the skull show a strong resemblance. The general form of the skull is the same. The great development of the premaxillaries, the reduced maxillaries, the huge orbit, defended by a ring of bony plates, are all present; but the jaws appear entirely edentulous and destitute even of a dentary groove.

The proportions of this reptile were very similar to those of *Ichthyosaurus*. The skull is about 2 feet (600 millims.) in length, and the facial portion especially produced. The orbits are very large, and the space between them is 140 millims. The sclerotic ring is composed of only eight plates; its diameter at the base is 106 millims., and at the apex 58 millims. These plates are not